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**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Paige Higby et al.

Application No.: 09/942,763

Group Art Unit: 1755

Filed: August 31, 2001

Examiner: [Unknown]

For: GLASS COMPOSITIONS

**DECLARATION OF KENNETH M. FYLES  
PURSUANT TO 37 C.F.R. § 1.132**

Assistant Commissioner of Patents  
Washington, DC 20231

Sir:

I, Kenneth M. Fyles, do declare and state as follows:

1. I reside at 9 Langholm Road, Garswood, Wigan, Lancashire, England, WN4 OSE.
2. I am not currently employed by Pilkington PLC (hereinafter "Pilkington"). I am presently retired.
3. I received a Bachelor of Science in Pure and Applied Chemistry from Liverpool Polytechnic, now known as Liverpool John Moores University, in 1968. I have over 26 years of experience in the manufacture of glass.
4. I became employed at Pilkington in 1968 and have worked in the Research Division of Pilkington from 1971 through 1997. From 1968 to 1971, I conducted research on glass making problems and also measuring the chemical durability of glass using radio-active tracer techniques. From 1971 to 1973 I worked on optical glass compositions at Chance

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Pilkington Optical Works (now known as Pilkington Special Glasses). From 1973 through 1980, I was a Scientist in the Research Division of Pilkington doing work with particular relevance to new fibre-glass compositions. From 1980 through 1996, I was a Senior Research Scientist in the Compositions Department of Pilkington researching on a large range of new glasses including float glass for new applications (new ultra-violet and infrared absorbing tints, televisions screens, etc., optical and photochromic glasses). From 1996 through 1997, I was a Principal Research Scientist in the Compositions Department of Pilkington, and from 1993 through 1997, I was the manager of the Compositions Department at Pilkington. As the manager of the Compositions Department, I reported to Peter A. Sewell who at that time was the manager of Advanced Glass Technologies at Pilkington.

5. I am a coinventor of the above-identified U.S. application Serial No. 08/472,189, with Paige L. Higby, Bret E. Penrod, Rodney G. Baker and Helen L. McPhail.

6. I am also a coinventor of U.K. Application No. 9302186.3, filed February 4, 1993, with Helen L. McPhail. A copy of U.K. Application No. 9302186.3 is enclosed as Exhibit 1.

7. Referring to Examples 7 and 23 of U.K. Application No. 9302186.3, there are disclosed glass samples including the following as chemical additives:

Example 7:

Total iron as		% of total iron as			
Fe <sub>2</sub> O <sub>3</sub>	FeO	Fe <sup>2+</sup>	Se	Co <sub>3</sub> O <sub>4</sub>	CeO <sub>2</sub>
0.34	0.098	32%	<2	32	0.4

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Example 23:

Total iron as		% of total iron as			
Fe <sub>2</sub> O <sub>3</sub>	FeO	Fe <sup>2+</sup>	Se	Co <sub>3</sub> O <sub>4</sub>	CeO <sub>2</sub>
0.6	0.124	23%	<2	20	0.2

8. The amounts of selenium are identified in both Examples 7 and 23 of U.K. Application No. 9302186.3 as "<2". This is because in 1993, the most reliable method for analysing selenium in glass was by way of X-ray fluorescence (XRF). However, XRF is not very sensitive to low amounts of selenium and cannot give accurate analysis if selenium in the glass is less than 2ppm.

9. I believe that it would be apparent to one skilled in the art in 1993 from reading U.K. Application No. 9302186.3, that the amounts of selenium in both of Examples 7 and 23 were greater than 0.5 ppm but less than 2 ppm. This is because the optical characteristics of the glasses described by colour co-ordinates a\* and b\*, (and also by the older alternative way of measuring colour, that is dominant wavelength and colour purity) are more neutral in colour than if selenium were absent. That is, the glass of Example 7 had a\* and b\* co-ordinates of -3.5 and -3.2, respectively, a dominant wavelength of 486 nm and colour purity of 4.0%. The glass of Example 23 had a\* and b\* co-ordinates of -3.8 and 1.0, respectively, a dominant wavelength of 499 nm and a colour purity of 1.5%. A person skilled in the art would conclude that to achieve these colour values (in glasses containing such high amounts of iron and cobalt), the selenium

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level must be greater than 0.5 ppm and probably greater than 1ppm. If selenium were not present at such levels, one skilled in the art would have expected that the colour co-ordinates given in Examples 7 and 23 would have been significantly more negative, indicating a less neutral colour.

10. Further, a person having ordinary skill in the art in February 1993 would be familiar with the following publications describing the spectra and colour of glasses:

Coloured Glasses by W.A. Weyl - Society of Glass Technology 1967; and

Colour Generation and Control in Glass by C.R. Bamford – Elsevier 1977.

From the data in these publications they would be able to determine the contribution of cobalt and iron (both as  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$ ) to the colour and spectra of the glass. They would also understand the absorptions of  $\text{Fe}^{2+}$  (in the infrared at about 1000nm wavelength) and  $\text{Fe}^{3+}$  (in the ultra-violet/visible at 380, 420 and 435nm wavelength) and their effect on colour as these adsorptions tail into the visible band (i.e. if  $\text{Fe}^{III}$  is dominant the glass colour moves towards yellow-green and if  $\text{Fe}^{II}$  is dominant the glass colour moves towards blue-green). A person having ordinary skill in the art in February 1993 would realise that the colour of glass examples 7 and 23 could not be fully explained unless there was a significant contribution from selenium in the glass.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are

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punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-identified application and any patent issuing thereon.

26<sup>th</sup> November 2001  
Date

Kenneth M Fyles  
Kenneth M. Fyles